The Power to Know You're Making a Difference

Embracing Insight Initiatives in Education

Table of Contents

By Mark David Milliron, Ph.D., vice president of the SAS Education and Medical Practice: **www.sas.com/education**

Introduction

"Nothing is more terrible than activity without insight."
Thomas Carlyle

Learn or die. The need for insight in education is almost that stark. Whether you're talking about countries, counties, cities or citizens, whether you're reading Thomas Freidman's *The World is Flat*, Richard Florida's *The Flight of the Creative Class* or the Education Commission of the States' report *Keeping America's Promise*, the conclusion is clear: Without education, the prospects are bleak. Freidman argues that without education and imagination, a country cannot compete in a globally woven world. Florida argues that communities that fail to support education — or worse yet, mute education expansion — are ensuring their fast decline. The authors of *Keeping America's Promise* point to harsh statistics showing that without achieving at least "some" higher education, a person is destined for a very different future, one with far less security, far less opportunity and far less promise.

Thankfully, the converse also is true: Education is a powerful pathway to possibility for individuals, organizations and communities. In many ways, it is *the* modern difference-maker. Education opens doors to economic opportunity, individual empowerment and creative expression in a way no other force can.

It is not surprising, then, that the power to know we are making a difference in education has become a necessity for schools, colleges, universities, communities, states, provinces and nations. Nor is it surprising that the search to make better decisions, leverage better strategies and design better systems in education is the highest of priorities in academia today. To achieve these ends, to gain the power to know we're making a difference, we need to begin to embrace insight initiatives. Insight initiatives in this context can be thought of as explorations of information from the past (hindsight) combined with looks to the future (foresight) that come together in a moment of insight to power decisions that make a positive difference. In the corporate world, some would use the term business intelligence to describe this work, or they might call it "competing on analytics."[1] These initiatives leverage technology, planning, research, strategy and host of other key elements.

To start the conversation, what we offer here is a broad exploration of the embrace of insight initiatives across multiple sectors — business, government, healthcare and education. The intent is to demonstrate that educators are not alone in these endeavors; that as these insight initiatives play out in other sectors, they actually lead to greater needs for education. Next, we'll briefly explore the technological infrastructure necessary to make these insight efforts work. Finally, we'll dive deeper into the key issues that arise as a result of these initiatives and surface a powerful role for education, not only in leveraging insight but also in living free in the modern world.

The embrace of insight

Much like the larger corporate world, the education field has been on a journey of transformation over the past 25 years. In fact, some called *A Nation at Risk: The Imperative for Educational Reform*, the 1983 report from the newly formed U.S. Department of Education, a shot across the bow to educators nationally and internationally. The authors of the report boldly claimed that the United States was suffering from a "rising tide of mediocrity" that threatened to make the country a non-player in an increasingly connected, knowledge-driven world.

This report triggered reform efforts at all levels of education. Educators soon began borrowing change strategies from the business world. They went with Peters and Waterman *In Search of Excellence* and became enamored with terms like MBO, TQM, CQI and reengineering. Peter Senge's *The Fifth Discipline: The Art & Practice of the Learning Organization* and Margaret Wheatley's chaos theory — with its butterflies flapping their wings in China, affecting financial markets in New York — tripped off the tongues of educators everywhere. A cursory look at education conference programs from the late 1980s through the mid-1990s will turn up session after session detailing change initiatives in education that would be hard to differentiate from those at GM or GE.

> Technology is neither good nor bad — it is our use of technology tools, within our contexts and toward specific ends, that can make a difference.

What happened next across education, business, healthcare and government was an intoxicated embrace of technology initiatives as the dominant driver of change. These efforts were spurred on by high-flying stock prices, hyperbolic pundits and more broadly attractive and useful technology. Alan Greenspan, former chairman of the U.S. Federal Reserve, referred to this as the time of "irrational exuberance." He warned that the oversized bubble of energy and capital expanding with little thought to implications, cautions or complicating factors would most naturally burst. Indeed, it's clear now that just as many business leaders forgot that a little thing called *profit* still mattered, many educators began to lose sight of their version of profit — a not-so-little thing called *learning*.

I like to refer to this time as the age of the "Techno-CroMagnon Theory." Whether it came from CEOs, chief medical officers, school principals or college presidents, the underlying assumption in many of the reform initiatives pushed by these leaders was amazingly simple, almost primal: "Technology ... good." The basic assumption was that technology would almost magically drive business, transform medicine and improve learning, that billions of dollars spent on hardware, software and systems integration would somehow help us move to a "new economy," to "new learning." Correspondingly, across business and education, technology leaders increasingly moved from the basement to the boardroom, from ancillary support functions to key players at the table driving operations and strategy.

What the dot-com boom provided next was a healthy dose of reality therapy — the inevitable dot-com bust. Nearly $7 trillion evaporated from the global stock market, companies closed and venture capital dried up. The bust, while devastating to some, didn't sour everyone on technology. It actually had the helpful effect of moving us into a state of *rational* exuberance. The problem wasn't that technology couldn't help. It was that **the underlying assumption was wrong**. Technology is neither good nor bad — it is our use of technology tools, within our contexts and toward specific ends, that can make a difference. This idea is the foundation upon which today's insight initiatives are built.

Bring on the insight

As I sat with a group of CIOs at an Information Technology Association of America (ITAA) meeting in 2005, technology leaders from consulting companies, retailers, software companies and educational institutions recounted different versions of the above story. Each person was seeing the rise of insight initiatives as a sea change in the use of technology. It was truly a move toward *information* technology — a move away from bells and whistles and features and functions — toward real value. They were bringing together strategic planning, customer research, market research, operations analysis, performance management, customer relationship management, supply chain management and internal learning efforts. In the world of education, it typically means the uniting of strategic planning, institutional research, technology initiatives and professional development. The big question that comes from this combination is, *What can we learn from information within our various and often siloed technology systems, information from the past (e.g., data mining) and from the future (e.g., forecasts driven by predictive analytics) to inform decisions today?* Put simply, *How do we develop the insight necessary to make a difference?*

When we take a step back and look broadly across all sectors, examples of insight initiatives in different forms are everywhere. Moreover, they are shaping our expectations in powerful ways. Take, for example, a common refrain in education today: "Our students have Amazon.com expectations." This refers to the near-instant insight that Amazon leverages in the consumer experience. When you order a book on Amazon.com — even *during* the process of ordering a book — Amazon.com leverages information to show you what other people who ordered that book also purchased. Moreover, Amazon.com uses analytics to shape the rollout of each new feature on its site and to reduce fraud.

Banks also are shaping our expectations with their insight efforts. Here's a quick personal example. About a year ago, my wife received a call from her bank card company asking whether she had lost her card. She didn't think she had, but the person on the phone asked her to check, just in case. Sure enough, her card was missing — we discovered later she'd left it at a coffee shop three hours earlier. Her question was, "How did they know?"

What my wife soon discovered, with a little help from a nice man sitting in a call center in India, was that whoever took the card went out and bought gas from a station just five miles from our house. However, it was a station at which she'd never bought any gas (first trigger). Then the person bought a dollar amount of gas that set off the second trigger. You see, my wife drives a Chevrolet Suburban, and I often tease her that it takes $600 to fill up the tank. The person who took my wife's bank card, however, bought only $5 worth of gas. That second trigger raised a red flag at the bank, at which point my wife was called "just to check" that it was in fact she who was using the card. Sure enough, it wasn't. And the card was canceled, just like that.

Let's take a deep breath and think about this scenario and the expectations it drives. Using insight drawn from fraud analytics, a bank with *millions* of customers was able to flag the fraud, engage a call center halfway around the world, have someone call my wife, confirm the fraud and cancel the card — all within three hours of her losing her card. Just 10 years ago, this process might have taken months or even years. Worse, it usually was the customer who discovered the theft and subsequent fraudulent purchases, and often the customer had to pay for it — literally and figuratively. With these new systems in place, however, my children will never have this latter expectation. It will be ours from another time.

Combine these kinds of experiences with others, such as 1-800-FLOWERS.COM's sending you an e-mail with sample flower arrangements and gift ideas three weeks before your significant other's birthday; Major League Baseball's customizing your visit to **www.MLB.com** based on the teams you follow; TiVo's using analytics to predict which programs you might like to watch and recording them for later viewing; and OnStar's giving you directions based on your GPS system and your most-traveled destinations. Even the U.S. Census Bureau is in on the game, putting its expansive data system at the fingertips of every American with systems such as American FactFinder (**factfinder.census.gov**). Taken together, it's undeniable that insight initiatives are raising the bar for how we are served and putting information literally at our fingertips to help us make decisions at home and at work.

> … it's undeniable that insight initiatives are raising the bar for how we are served and putting information literally at our fingertips to help us make decisions at home and at work.

Even in the healthcare arena, insight initiatives are beginning to make their mark. Duke University Medical Center is driving an active Six Sigma project aimed at connecting the often disconnected systems that plague hospitals, a problem that can lead to devastating medical errors. Duke is leveraging technology systems, electronic medical records, operations research, systems analysis and the data mining of millions of records to ensure that the decisions its staff makes do indeed make a difference. Similar initiatives that leverage strategic performance management as the core research framework are under way at Yale-New Haven Medical Center and Brigham and Women's Hospital. When talking about high-stakes decision making, one needs to look no further than the healthcare industry. In healthcare as in few other industries, decisions often are literally life or death.

Business, government and healthcare insight drivers

There are many drivers of insight initiatives; not the least of these is the almost mind-numbing number of regulations that have emerged in the last decade or more. In response to high-profile fraud, terrorism and operational errors, businesses, government agencies and healthcare providers are facing an expansive and probing regulatory framework that demands instant, accurate and fluid reporting. From the landmark Sarbanes-Oxley regulations for financial reporting to the similar Basel II protocols in Europe, to the U.S. HIPAA Privacy Rule, to the right-to-know initiatives sweeping across government, each sector must demonstrate compliance and insight into operations.

Jail has been another motivator. This is no joke! CEOs of major corporations and government agencies now face major prison time for not knowing what is happening in their own organizations — that is, if you believe their stories. Not knowing is no longer a defense against allegations of fraud and other corporate ills. Board members are increasingly liable, investors are being exposed, and leaders are on the line. The stakes have been raised significantly, and the power to know relates strongly to the power to stay above the law.

Furthermore, there is competition around every corner using these insight initiatives. Wal-Mart, now the world's largest retailer, actually was mocked at one time for its driving use of analytics as the chain began its meteoric rise. Now almost all major retailers are developing information systems to better connect their systems, inform decisions and drive through an increasingly complex set of globally connected variables to reach an attractive bottom line. Insight is becoming an operational imperative for the modern business. Business intelligence is the major buzzword; advanced analytics is the gold standard.

However, let's not reduce all the drivers to greed and cutthroat competition. Many, if not most, of the leaders embracing business intelligence — or insight initiatives — are doing so out of a sense of passion and purpose. They want to run a better business, a stronger government agency, a world-class hospital. They want to make a difference. One simply has to read some of the leading books on change initiatives, such as Gary Cokins' *Performance Management: Finding the Missing Pieces (to Close the Intelligence Gap)* or Jim Collins' *Good to Great: Why Some Companies Make the Leap…and Others Don't* to get the point. It's no longer the swashbuckling CEO who saves the day, but the driving group of leaders willing to learn, willing to truly leverage *information* technology, willing to face the brutal facts and, most important, willing to do something with the information that transforms organizations.

Driving insight in education

While the drivers may be different, education too is responding to modern challenges with insight initiatives. A hundred years ago, higher education in particular was not spoken of as a necessity for *most* people. Indeed, the education expansion debate at that time centered on universal high schools. It dominated the educational landscape because in an increasingly industrial world, a somewhat higher skill set was needed for factory work — particularly technical skills. Higher education in general could remain mostly elitist in its private institutions and more bluntly Darwinian in its more merit-based institutions (e.g., land-grant universities). "Students, look right and look left; only half of you will be here at semester's end" is the apocryphal quote most often used to describe this state of affairs.

Societies and nations can no longer afford to be sloppily Darwinian with our educational systems. These systems must be tightly integrated, highly effective and laser-focused on helping *most* students move into higher education.

But as noted in the introduction, the dawn of the Information Age has raised the stakes considerably. Today's K-12 leaders are asked to prepare *most* students for higher education and a world driven by lifelong learning. Love it or hate it, the No Child Left Behind Act is sparking a firestorm of dialogue about outcomes and about whether U.S. students are ready for this shift in education. Margaret Spellings, the U.S. secretary of education, argues that accessibility, affordability and accountability must be the catchphrases across all sectors of education. While not advocating reporting regimes for higher education that mirror the NCLB framework, she is, however, driving home the need for transparency,[2] the power for children, parents and community members to know whether they are well on the road toward a life of learning.

In their book *Help Wanted…Credentials Required*, Anthony Carnevale and Donna Desrochers note that for students to make their way in the new economy, they need at least "some college." More importantly, these students must develop the ability to continually learn, adapt and grow to survive. Societies and nations can no longer afford to be sloppily Darwinian with our educational systems. These systems must be tightly integrated, highly effective and laser-focused on helping *most* students move into higher education. Because of this, the Bologna process in Europe is demanding greater connection, greater accountability and greater insight into how students move through European systems of education. Singapore's version of these initiatives sums up the imperative quite well: Thinking Schools, Learning Nation.

It is a new day in education systems worldwide. Unfortunately, however, we do not begin this day with new schools. Most education systems remain time-bound, role-bound, place-bound and bureaucracy-bound institutions;[3,4] it is still far too difficult for those who teach, reach and lead in the world of education to answer the burning question, *How do we know we're making a difference?* We in education are quite adept at tripping tales off the tongue about the impact of teaching strategies, intervention initiatives, learning communities and new technology tools. We regale listeners with stories of passionate educators, inspirational students and driven institutions. However, spreading, scaling or simply replicating these efforts is extremely difficult without hard, compelling data that moves beyond what Kay McClenney calls a "culture of anecdote" to a "culture of evidence."[5]

Truth be told, we need the power to know that our advocacy is based on a firm foundation and not unique experiences. Lisa Petrides, in her book *Turning Knowledge into Action: What's Data Got to Do With It?,* calls this the move to a culture of inquiry (COI). Organizations driven by COI tackle difficult issues; they drive what Steven Gilbert from the Teaching, Learning, and Technology Group (**www.tltgroup.org**) calls "dangerous discussions" — taking hard looks at all activities to assess impact.

Gaining this power to know involves solidly and boldly embracing initiatives that give us greater insight than we've demanded thus far. And much like an extroverted aunt hugging an introverted nephew, welcoming this embrace often is difficult for both individuals and institutions not comfortable with this level of exploration. Right or wrong, we simply did not have to answer these questions in the past — the stakes were not high enough, and the expectations were not that most students would succeed in education. Indeed, in the Agrarian and Industrial Ages, few would have even entertained education imperative arguments. But that clearly is where we are today. For those of us who champion education not simply for economic reasons, it is a sweet irony that economics has made education the imperative and has made the power to know a must. So this is where we are: Deeply in need of insight into how our work works.

There is good news, though: As we can see from the preceding sections, we are not alone on this journey. Indeed, a strikingly similar set of circumstances is wrapping its arms around the business, government and healthcare arenas. They too are living through the confluence of the shift of the societal and economic frameworks along with the desperate need to leverage insight to serve well — and sometimes to survive at all. Moreover, their application of insight efforts is shaping expectations in ways that clearly are rippling over into education.

Other drivers also are compelling the embrace of insight in education. Declining funding at state and national levels means that education leaders need information systems that help them do more with less, as well as drive entrepreneurial activities and fundraising.[6-9] Our governing boards and community leaders are asking for hard information on return on investment related to the billions of dollars spent on technology over the last decade.[10,11] Learning theorists are driving toward more complete visions of learning assessment that will better inform practice.[12,13] We have mounting pressure from for-profit providers, who without a doubt will leverage business intelligence in their drive to crack the trillion-dollar worldwide learning market.[14]

However, we must not lose sight of the main reason most educators are involved in their work — they want to make a difference in students' lives. Having the power to know you're making a difference is, for them, long overdue.

Bring on the insight in education

As discussed before, the array of regulatory frameworks — from the U.S. Department of Education's No Child Left Behind Act to the Bologna process in Europe to test regimes in Qatar — is leading educators to search for greater insight into their educational systems and strategies. Additionally, other external sources are bringing publicly available data to parents, community leaders and legislators to start conversations. The Education Trust (**www.edtrust.org**) is one of the leading drivers of these kinds of dialogues, using data from SAS[®] EVAAS[®] for K-12 as well as a host of other sources, to highlight successes and start difficult explorations of weaknesses in educational systems. In addition, the Bill & Melinda Gates Foundation posts a nationwide report card of state-by-state school system performance as part of its work in igniting change in education through rigor, relevance and relationships (**www.gatesfoundation.org/Education/TransformingHighSchools/**).

Other initiatives also are bringing insight to education from more direct sources. The National Survey of Student Engagement (**nsse.iub.edu/index.cfm**), the Community College Survey of Student Engagement (**www.ccsse.org**) and the newly created High School Survey of Student Engagement (**ceep.indiana.edu/hssse/index.html?reffromnsse=index.htm**) all use the technique of leveraging the reams of research reports about what works in teaching and learning and then reaching out directly to students. The leaders of these initiatives have created surveys that seek to capture data from students about whether they are engaged in teaching and learning activities that research shows will lead them toward success in education. Moreover, the leaders of these surveys encourage the hundreds of institutions that participate to benchmark themselves against like institutions to compare their effectiveness and drive conversations about what level of engagement is "good enough."

In the United States, associations and programs are driving broader benchmarking initiatives that are leveraging insight. For example, members of The Western States Benchmarking Consortium (**www.wsbenchmark.org**) are searching for "more meaningful accountability." Leading school districts in this group are driving student performance analysis, financial intelligence, strategic performance management and human capital intelligence projects. The Achieving the Dream (ATD) project (**www.luminafoundation.org/grants/atdfaqs.html**), funded by the Lumina Foundation, is challenging community colleges to use systematic data collection to learn more about access and success in two-year institutions. Moreover, ATD and other programs, such as the College and Career Transitions Initiative (**www.league.org/ccti**), are driving institutions to look at data sets that explore the flow of students between levels of education. And the EDUCAUSE Center for Applied Research (**www.educause.edu/ecar**) is striving to use research and analysis to help higher education leaders make better decisions.

While they may not have achieved the sophistication of Amazon.com or the interactivity of gaming systems, it's clear that education insight initiatives on the local, state, national and international levels are on the rise. However, to move more boldly in this direction, important conversations about people, processes and culture need to begin. Furthermore, key explorations of the root intelligence architecture of education institutions are a must.

Infrastructure

SAS is keenly aware of the technology underpinnings necessary to drive the power to know you're making a difference in business, government, healthcare and education. It is SAS' reason for being. Indeed, almost every insight example used in the preceding sections involves SAS solutions and/or partnerships. However, the intent of this piece is not to outline a detailed SAS technology infrastructure. Many other key sources for such explorations are available.[15] Nonetheless, it is important to at least outline the big-picture elements to help illuminate the insight challenge and the power behind the modern intelligence architecture.

To drive toward insight in any sector, the first challenge is to bring together data from a wide range of internal and external sources. These sources include internal systems that manage financial transactions, student transactions, learning environments, facilities usage, bus routes and more. But they also include external data sources from state/provincial/federal systems, labor statistics or partner benchmarking organizations. It is this larger, interconnected scope that enables the first steps toward insight.

Many educational institutions have worked long and hard to stand up stable, robust transactional systems. In fact, for many, the implementation of these systems has been unexpectedly expensive and organizationally traumatic — driving a complete overhaul of processes and broad involvement in training and retraining. SAS does not discount the importance of these systems. Without quality information transaction systems like these — what often are called Enterprise Resource Planning (ERP) systems — your service capabilities are limited. However, the best insight you can hope for is good basic reports on top of the basic transactional silo — e.g., student reports from the student system and financial reports from the finance system. However, in this context, broad exploration of the data from all of these internal systems — to say nothing of external data sets — is painful, manual and extremely time-consuming.

The first step, then, is to integrate the data from all of the various available sources. Data integration is a real difference-maker in the beginning stages of creating a solid intelligence architecture. The SAS®9 Data Integration suite can draw data from almost any source in native format. Moreover, the tools to clean, sort, store and position data for analysis are unparalleled. Most transactional systems have challenges with duplicate, dirty or disparate data. Addressing these challenges actually can improve the quality of the transactional system over time, pointing to opportunities to fix data collection points elsewhere in the system.

This upfront heavy lifting is a must for those eager for insight. Manually linking report systems from disparate silos is difficult to sustain, if not questionable in quality. The systematic gathering, cleaning, storing and leveraging of data form the basic foundation of a quality intelligence architecture. Just as a building must have a firm foundation, so too must data systems if they are to tell us anything of value. Without this solid underpinning, pretty reporting systems turn out impressive charts and compelling pictures "full of sound and fury, signifying nothing." You just can't trust the data.

Built on a firm data integration foundation, the SAS®9 Business Intelligence solutions bring information to end users in a variety of formats. Business users see Microsoft Excel spreadsheets powered by SAS; institutional researchers use SAS Enterprise Guide® and SAS Enterprise Miner™ to analyze and mine data; teachers, reachers and leaders see dashboards, scorecards, OLAP cubes, prepared reports and ad hoc query forms that bring the power to know to their fingertips. What is most impressive is that all of these are part of a fully integrated system, leveraging the same data and the same metadata layer — meaning information about information stays in the same place, making it easier to track. In the next step, next-level questions in response to a given report or dashboard indicator are easily obtained without weeks of effort or deeper questions about the integrity of the data. The question *Where did this data come from?* can always be answered.

Probably the gold standard of the entire process is that this firm foundation, rock-solid hindsight and real-time data engine are joined by SAS' analytics. The foresight that comes from SAS' predictive modeling, forecast server and optimization routines combines with this hindsight to power true insight. It is this robust, integrated and easy-to-use system from which insight is drawn. This insight gives educators a different level of confidence about the road ahead.

Once the intelligence architecture is in place, institutions can leverage different SAS solutions to bring even greater insight. Advanced solutions for administrative intelligence, student and learning intelligence, research intelligence and academic programs can leverage the power of the platform. Day-to-day operations can benefit from solid data tracking and access. In addition, educators can ask and answer an array of important questions at all different levels of education. For example:

- What are the key factors leading to student success in our institution?

- What are the predictors of students' dropping out?

- What's the right mix of courses so the most students graduate?

- Which learning objects for this unique student will lead to the best assessment outcomes?

- What's the right mix of online, in-class and hybrid courses to serve the most students?

- What are the true costs of this program?

- Which faculty members are most likely to retire?

- What will it cost to replace them?

- Which factors positively influence alumni giving?

- How does late registration affect retention?

- What busing patterns serve our students best?

- If a student from a given demographic background interacts with a set of support services, engages a given set of learning opportunities, proceeds on a given curricular path, on a given timeline, what is his or her likelihood of adequate progress?

This is just a smattering — a taste — of the good and complex work that can be done once a complete intelligence architecture is place. The hardworking folks of an educational institution are able to ask important questions and, most importantly, get answers — even to questions they don't know to ask. They are no longer lost in the dark, wondering what the road ahead might hold if they make a change or wondering whether their current programs are worth the effort.

Issues and implications

Getting the infrastructure in place is an important part of moving toward gaining the power to know you're making a difference, toward leveraging insight. However, let's not wax poetic just yet. There are a number of key issues and important implications to consider as we tackle insight initiatives. Many of these are much more important than the bits and bytes — remember, technology is just a tool used to achieve the goals to which we aspire.

As Jim Davis, Gloria Miller and Allan Russell point out in their new book, *Information Revolution: Using the Information Evolution Model to Grow Your Business*, technology is a small part of a larger process. The Information Evolution Model (IEM) the authors outline breaks down the information journeys on which institutions embark into five discrete levels. The authors argue that these levels are sequential and that levels cannot be skipped.

Operational Level: This level frequently is characterized by individual data-collection efforts. Often, it is only through the Herculean efforts of a dedicated individual that any data from an organization is surfaced. The challenge is that this system is not fast or scalable enough to serve at an enterprise level — nor is it fair to the poor individual(s) saddled with the responsibility of data collection. Oftentimes these individuals are smack in the middle of power politics or technology infrastructures that make it difficult for them to complete their work. The stakes are too high to have these efforts so individualized. These data heroes need our help!

Consolidation Level: This level involves discrete units or functions engaging in insight initiatives of their own. However, these efforts tend to devolve into pretty reports on top of silos of activity. The results are good spreadsheets on finance, pretty reports of student enrollment and interesting data charts on alumni, but there is no integration of this data. Unfortunately, these discrete and siloed efforts often are expensive but lead to little utility.

Integration Level: This is one of the most painful stages. It's where the effort is finally made to move to an enterprise view. Large-scale initiatives usually are undertaken to pull together data from disparate sources — internally and externally. This is where organizations begin talking about data warehousing and dabbling in data mining in search of trends across the enterprise. However, the view usually is into data from the past and present.

Optimization Level: This is the level at which the organization begins developing a good understanding of its enterprise and those it serves; then it begins utilizing predictive insights. The search turns from a *quality* way to operate to the *best* way to serve. The scientific process of data analysis becomes deeply ingrained in the organization — and the "culture of evidence" emerges.

Innovation Level: This is the level at which the organization is truly leveraging insight — hindsight and foresight targeted to key ongoing operations. There is a spirit of cooperation, creativity and innovation. The focus on science is blended with the "art" of decision making — experience, out-of-the-box thinking and genius. The art and science of insight find a synergy as the organization takes on its challenges.

From the authors' work with thousands of organizations worldwide, it's clear that most organizations are wrestling somewhere along this continuum. Most begin talking to a company like SAS somewhere between levels 1 and 3. However, an important point to make about IEM is that it clearly outlines that technology is just one leg of a four-legged stool of interacting factors. Without the right people, especially leaders and technicians, these initiatives are hard-pressed to succeed. Longstanding processes — some sacred — need to be examined at levels that are uncomfortable to some. And the organizational culture must be ready to accept this kind of introspection. For example, without proper trust in an organization, these efforts often are read as attempts to attack unions, punish teachers or weed out excess staff. Powerful cultural forces, from the caustic cynics to the true believers, can make even the best plans go awry. The interplay among people, processes, culture and technology is a delicate dance that will challenge the best of leaders.

In his recent *Harvard Business Review* article "Competing on Analytics," Thomas Davenport supports this basic framework and argues that organizations that are truly competing and excelling with analytics are doing the right things:

1. *The Right Focus:* Analytics have to be focused on mission-critical areas to truly make a difference. It's not about what's interesting, but what data is transformational in its impact on operations, service and the bottom line.

2. *The Right Culture:* Much like the Information Evolution Model, the argument here is that the culture of the organization can embrace, disregard or sabotage these efforts. It has to be watched closely. A constant focus helps. One CEO joked during a seminar that you can be fired at his company for three things: stealing, sexual harassment and not using a control group. That's how seriously the company's culture takes analytics.

3. *The Right Technology:* This means having a data strategy that drives IT purchasing and processes. It also means having sophisticated business intelligence software. "Doing it yourself" may be recipe for disaster when data analysis is mission-critical. And hardware has to be robust enough to handle the load. This means 64-bit processors and possibly grid computing to handle the analytics.

4. *The Right People:* People with problem-solving skills, critical-thinking abilities and decision-making expertise are a necessity, particularly for leaders determined to leverage analytics. So too are statisticians, programmers and technologists who can stand up strong technology infrastructures. At one point, Davenport argues that "analytical talent may be to the early 2000s what programming talent was to the late 1990s."

On the people side, one of the key challenges is hiring the right people in necessary numbers. Our current environment isn't exactly teeming with reasonably priced analytic talent. However, one key advantage of the education world is our willingness to share. In fact, we in education are said to be the masters of the CASE method: Copy and steal everything! We love borrowing from each other — be it curriculum, strategies or resources. By pulling together in communities of practice, we can bring together the best of our insight initiatives and learn from each other's work. We can share predictive models, compare key challenges, maybe even share infrastructure. There is much we can accomplish by working together.

But these are not the only issues with insight initiatives. The broader search for insight in business, government and education challenges us consider our role in society. For example, unfortunately, there are some people who seek to leverage intelligence tools to create connections with people for not-so-positive aims. Visit the Southern Poverty Law Center's Web site (**www.tolerance.org**) if you want to see the use of Internet insight by hate groups to pull people in. On these various hate sites, you'll see videos and video games, full CRM strategies in action, as part of attempts to lure the young and exploit the uneducated.

Beyond hate groups and terrorist organizations, there are significant privacy concerns, manipulation fears and ethical dilemmas with which we must wrestle. Read *No Place to Hide: Behind the Scenes of Our Emerging Surveillance Society* by Robert O'Harrow for a disquieting journey into the dangers involved in taking these efforts too far. While a bit polemic in places, the book definitely outlines some key issues for our modern world. In an always-on society, with our every move chronicled by electronic devices from RFID to credit cards to cell phones, there are real concerns that deserve real dialogue.

> Education is a modern imperative — so much so that insight initiatives are emerging in all sectors and at all levels of education.

This is one of the reasons SAS is such a strong supporter of education. The major thrust of all of our philanthropy is into education. And yes, science, technology, engineering and math programs are essential in our modern world. We champion these with a passion. However, so too are liberal arts, critical thinking, problem solving, decision making, creativity and art. Visit the SAS worldwide headquarters in Cary to see one of the largest private collections of art — spread throughout our campus — in all of North Carolina. Notice the soccer fields, tennis courts and walking paths to see how we value much more than the technical side of life. See the smiling faces of the children playing in our Montessori kindergarten center to see that we take education seriously — both promoting it and enabling it. We firmly agree with Thomas Jefferson in his famous quote "If a nation expects to be ignorant and free … it expects what never was and never will be."

Conclusion

Learn or die. There are many ways to read this phrase. From the individual level, without education, our options are limited and our futures dark. Moreover, the likelihood of being manipulated in the modern world is significantly greater. On the organizational level, without an educated work force that's continuously learning, we will be hard-pressed to successfully achieve our missions. On the societal level, the pundits speak plainly: States, provinces and nations that neglect education do so at their own peril.

Education is a modern imperative — so much so that insight initiatives are emerging in all sectors and at all levels of education. And as noted here, we are not alone. The corporate, government and healthcare sectors also are taking on this sort of work, for a host of different reasons. So it's time for us to use the CASE method. Let's learn from other sectors, learn from each other and learn from our own work in an effort to bring more meaningful, deep learning to our students. They deserve our best. They deserve, as Carlyle argues, activity with insight. They deserve to learn, live and thrive. By working together, we can know that we're making a difference — and know that we're helping students embrace this exciting future.

Bibliography

1. Davenport, T. H. "Competing on Analytics." *Harvard Business Review*. January 1, 2006.

2. Spellings, M. "Is America Really Serious About Educating Every Child?" *Remarks at the Education Writers Association 58th National Seminar.* St. Petersburg, Fla., May 2005.

3. O'Banion, T. *A Learning College for the 21st Century.* Jointly published by The American Council on Education and The American Association of Community Colleges. Oryx Press, 1997.

4. McPhail, C. J. *Establishing and Sustaining Learning-Centered Community Colleges*. Community College Press/American Association of Community Colleges, January 2005.

5. McClenney, K. M. *Keeping America's Promise: A Report on the Future of the Community College*. A joint project of the Education Commission of the States and the League for Innovation in the Community College, 2004.

6. Bok, D. *Universities in the Marketplace: The Commercialization of Higher Education.* Princeton University Press, 2004.

7. Kirp, DL. *Shakespeare, Einstein, and the Bottom Line: The Marketing of Higher Education*. Harvard University Press, 2004.

8. Roueche, J.E, Jones, B.R. *The Entrepreneurial Community College.* Community College Press, 2005.

9. Milliron, M.D., de los Santos, G.E. "Feels Like Third Wave: The Rise of Fundraising in the Community College." Chapter in: *Successful Approaches to Fundraising and Development: New Directions for Community Colleges*. Jossey-Bass, 2004.

10. Green, K. C. *The 2005 Campus Computing Survey.* Presented at the EDUCAUSE 2005 Annual Conference. Orlando, Florida: October 18–21, 2005.

11. Graves, W.H. "Improving Institutional Performance through IT-Enabled Innovation." *EDUCAUSE Review*. November/December 2005.

12. Zull, J. *The Art of Changing the Brain: Enriching the Practice of Teaching by Exploring the Biology of Learning*. Stylus Publishing: September 2002.

13. Smilkstein, R. *We're Born to Learn: Using the Brain's Natural Learning Process to Create Today's Curriculum*. Corwin Press: December 2002.

14. Moe, M., Bailey K., Lau R. *The Book of Knowledge: Investing in the Growing Education and Training Industry.* Merrill Lynch and Co., April 1999.

15. *Beyond Business Intelligence: SAS®9 redefines the possibilities.* SAS Institute Inc.: March 2004.

SSAS.

**World Headquarters
and SAS Americas**
SAS Campus Drive
Cary, NC 27513 USA
Tel: (1) 919 677 8000
Fax: (1) 919 677 4444
U.S. & Canada sales:
(1) 800 727 0025

SAS International
PO Box 10 53 40
Neuenheimer Landsr. 28-30
D-69043 Heidelberg, Germany
Tel: (49) 6221 4160
Fax: (49) 6221 474850

www.sas.com